



09/29/00

## PATENT APPLICATION TRANSMITTAL LETTER

Commissioner for Patents  
**BOX PATENT APPLICATION**  
 Washington, DC 20231

Docket No. 6169-140

PATENT **A**

jc916 U.S. PTO  
 09/676545  
 09/29/00

Transmitted herewith for filing of the patent application of:

**Inventors:** Neil Katz, Parkland, FL  
 Bruce P. Semple, Potomac, MD  
 Edith H. Stern, Boca Raton, FL  
 Barry E. Willner, Briarcliff Manor, NY

For:

Enclosed are:

- ☒ Specification, including the Abstract
- ☒ 6 Sheets of drawings (3 sets)
- ☒ Executed Declaration and Power of Attorney
- ☒ Executed Assignment and Recordation Cover Sheet
- ☒ Other: 2 postcards

## CLAIMS AS FILED

FOR	NO. FILED	NO. EXTRA
Basic Fee		
Total Claims	27	7
Indep Claims	5	2
multiple dependent claim present No		

If the difference in Col. 1 is less than zero, enter "0" in Col. 2

Assignment Recordal Fee

## Small Entity

RATE	FEE
	\$ 345
x \$ 9 =	\$
x \$ 39 =	\$
x \$ 130 =	\$
TOTAL	\$

## Other than a Small Entity

RATE	FEE
	\$ 690
x \$ 18 =	\$ 126
x \$ 78 =	\$ 156
x \$ 260 =	\$
TOTAL	\$ 972

\$ 40

Please charge my Deposit Account No. 17-0055 in the amount of \$ \_\_\_\_\_.

☒ A check in the amount of \$1,012.00 is enclosed.☒ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 17-0055. A duplicate of this sheet is enclosed.☒ Any additional filing fees required under 37 C.F.R. 1.16.☒ Any patent application processing fees under 37 C.F.R. 1.17.☐ No fee enclosed. No fee is authorized.

Date

9-29-00

Steven M. Greenberg  
 Registration No. 44,725

"EXPRESS MAIL" LABEL NO.: **EK575132406US**

**USER CONTROLLED MULTI-DEVICE MEDIA-ON-DEMAND SYSTEM**

**Inventor(s):**

Neil Katz  
Bruce P. Semple  
Edith H. Stern  
Barry E. Willner

International Business Machines Corporation

IBM DOCKET BOC9-1999-0082  
IBM DISCLOSURE BOC8-1999-0105

**CROSS REFERENCE TO RELATED APPLICATIONS**

(Not Applicable)

**STATEMENT REGARDING FEDERALLY SPONSORED**

**RESEARCH OR DEVELOPMENT**

(Not Applicable)

**BACKGROUND OF THE INVENTION**

**Technical Field**

The present invention relates to the field of multimedia transfer and control. More particularly, the instant invention relates to a method and apparatus for dynamically controlling and referencing digital media independent of the point of access.

**Description of the Related Art**

Users, both business and consumers, are increasingly becoming accustomed to having large amounts of digital data delivered from various media-on-demand (MOD) systems. The continuing evolution from narrowband to broadband networks has fueled a growing need for digital data delivery by facilitating the transmission of broadband data not only by wired means, but also by wireless means. For example, the Internet, with its myriad of text, audio and video content, and its omnipresent availability, can provide consumers with a wealth of information that is practically accessible from anywhere through numerous wired and wireless means. As networks which provide access to digital data continue to evolve, the networks improve their ability to more efficiently distribute and serve bandwidth demanding streaming audio and video content to consumers.

Various forms of wired access methodologies have been created to provide consumer access to the various broadband networks. For example, cable modem service provided by cable service operators can provide Local Area Network (LAN) type access speeds via the same coaxial cable that carries cable signals to the premises of

10  
15  
20  
25  
30  
35  
40  
45  
50  
55  
60  
65  
70  
75  
80  
85  
90  
95  
100  
105  
110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200  
205  
210  
215  
220  
225  
230  
235  
240  
245  
250  
255  
260  
265  
270  
275  
280  
285  
290  
295  
300  
305  
310  
315  
320  
325  
330  
335  
340  
345  
350  
355  
360  
365  
370  
375  
380  
385  
390  
395  
400  
405  
410  
415  
420  
425  
430  
435  
440  
445  
450  
455  
460  
465  
470  
475  
480  
485  
490  
495  
500  
505  
510  
515  
520  
525  
530  
535  
540  
545  
550  
555  
560  
565  
570  
575  
580  
585  
590  
595  
600  
605  
610  
615  
620  
625  
630  
635  
640  
645  
650  
655  
660  
665  
670  
675  
680  
685  
690  
695  
700  
705  
710  
715  
720  
725  
730  
735  
740  
745  
750  
755  
760  
765  
770  
775  
780  
785  
790  
795  
800  
805  
810  
815  
820  
825  
830  
835  
840  
845  
850  
855  
860  
865  
870  
875  
880  
885  
890  
895  
900  
905  
910  
915  
920  
925  
930  
935  
940  
945  
950  
955  
960  
965  
970  
975  
980  
985  
990  
995

a subscriber. The cable modems used in these systems can support transmission speeds on the order of several megabits per second depending upon whether the network is engineered to use a symmetrical or an asymmetrical topology. These systems are orders of magnitude faster than narrowband systems, which typically can provide transmission speeds ranging from 28Kbps to 56 Kbps. Digital Subscriber Loop (DSL) technology also can provide broadband access to subscribers, albeit, through traditional Plain Old Telephone Service (POTS) copper twisted pair lines. DSL modems, although not as fast as cable modems today, are touted to provide downstream speeds approaching 2 Mbps and upstream speeds approaching 512 Kbps depending upon the underlying network implementation.

Several wireless access technologies have been used to provide broadband wireless access to consumers. For example, the Reunion Broadband Wireless Access (BWA) manufactured by Nortel Networks Corporation of Brampton, P.O. provides a digital point-to-multipoint technology operating at frequencies ranging from 24 GHz to 38 Ghz. Additionally, Bluetooth™, a wireless technology for providing a short range radio link between various small form factor data devices, can operate at 2.45 GHz with transmission speeds of 721 Kbps. Finally, various other technologies, such as Fixed Wireless Loop, Wireless Local Loop, Local Multipoint Distribution System (LMDS) and Multichannel Multipoint Distribution System (MMDS) have be used to provide broadband access to subscribers.

The growth and gradual switch from narrowband to broadband access and services has eased user access to digital media by decreasing download time, consequently increasing user willingness to access digital media networks. This growth in network access and subscriber willingness has fueled the need to provide subscriber terminals to access the various broadband services. Typical subscriber access devices include, PCs, TVs, set-top boxes, handheld computers, wireless LAN devices, and audio devices that have the capability to download digital media content from the

Internet for later playback and viewing.

Consequently, a new problem of user/subscriber control over the transmission of digital media has arisen from the development of MOD services, broadband access and the existence of a myriad of access devices, each having its own capabilities and access characteristics. Current systems lack functionality for accessing specific digital media on a first access device in a viewing session, and subsequently continuing the viewing session by allowing access of the same digital media from a second access device. For example, with present systems, a user viewing a movie delivered through a TV at home, cannot terminate the delivery of the movie only to resume the delivery of the same movie at a later time. Additionally, current systems do not permit one to resume delivery of a movie at a later time through a different access device, for example a PC. Finally, current systems do not permit the resumption of the delivery of the movie to an access device positioned in a location that differs from that in which the original access began, namely, the home. Accordingly, given the limitations and inflexibility present in current MOD systems, there exists a need to provide a more efficient and flexible system and method for providing configurable access to digital media in a MOD system.

**SUMMARY OF THE INVENTION**

5 The present invention can include a method for providing configurable access to media in a media-on-demand system. The method can include the steps of delivering the media to a first client device through a first communications link; recording a bookmark specifying a position in the media; and delivering the media to a second client device through a second communications link. Significantly, the delivery to the second client device can begin at the position specified by the recorded bookmark. The method can further include the steps of identifying device properties for each of the first and second client devices; and, delivering the media to the first and second client devices through the respectively established first and second communications links. Notably, the client device properties can include the client device type, particular media formats which can be processed by the client device and the type of communications link which can be supported by the client device.

10  
15 In one aspect of the present invention, the media can be delivered to first and second client device sessions through first and second communications links respectively. Generally, in this aspect of the present invention, the first and second client device sessions can reside in a single client device. However, the invention is not limited in this regard and the first and second client device sessions can reside in first and second client devices.

20 Notably, the media can be delivered in a format compatible with the identified device properties. Specifically, in one aspect of the invention, the media is stored in a media-on-demand server (MODS) and delivered to the first and the second client devices via the first and the second communications link respectively. In another aspect of the invention, the step of delivering the media to the first client device via the first communications link, can include receiving the media from the MODS in an intermediate server. In the intermediate server, the media can be converted to a format compatible with the identified device properties of the first client device; and the

25

converted media can be delivered to the first client device via the first communications link.

In another aspect of the invention, the step of delivering the media to a second client device via the second communications link can include receiving the media in an intermediate server from the MODS. In the intermediate server, the media can be converted to a format compatible with the identified device properties of the second client device. Subsequently, the converted media can be delivered to the second client device via the second communications link.

In one aspect of the present invention, the method also can include the steps of storing the media in selected ones of a plurality of media-on-demand servers. Each MODS in the plurality of media-on-demand servers can store the media in at least one format compatible with a selected device type. A MODS can be selected for delivering the media to the first client device. The selected MODS can have stored thereon the media in a format compatible with the first client device. Subsequently, the media can be delivered from the selected MODS in a format compatible with the first client device. Likewise, a MODS can be selected for delivering the media to the second client device, wherein the selected MODS has stored thereon the media in a format compatible with the second client device. Subsequently, the media can be delivered from the selected MODS in a format compatible with the second client device.

The selecting step can further include determining if a MODS is available for delivering the media to the first client device in a format compatible with the first client device. If it is determined that a MODS is not available for delivering the media to the first client device in a format compatible with the first client device, a MODS can be selected for delivering the media to the first client device. Notably, the selected MODS can contain the media in a standard format. As such, the media in the standard format can be converted to a format compatible with the first client device.

Similarly, the selecting step can further include determining if a MODS is

available for delivering the media to the second client device in a format compatible with the second client device. If it is determined that a MODS is not available for delivering the media to the second client device in a format compatible with the second client device, a MODS can be selected for delivering the media to the second client device. Notably, the selected MODS can contain the media in a standard format. As such, the media in the standard format can be converted to a format compatible with the second client device.

A method for providing configurable access to media in a media-on-demand system also can include delivering the media to a first client device in a format compatible with the first client device; interrupting the delivery of the media; recording a bookmark specifying a position in the media where the interruption occurred; and resuming delivery of the media to a second client device, the resumed delivery beginning at a position in the media specified by the recorded bookmark. The method further can include identifying device properties for each of the first and second client devices; delivering the media to the first client device in a format compatible with the identified device properties for the first client device; and, delivering the media to the second client device in a format compatible with the identified device properties for the second client device.

The present invention also can include a user-controlled media-on-demand system. The system can include a media-on-demand server (MODS) for delivering media to client device sessions; a first communications link between the MODS and a first client device session; a second communications link between the MODS and a second client device session; and, a bookmark in the MODS specifying a position in the delivered media. Notably, the MODS can deliver media to the first client device session over the first communications link. Similarly, the MODS can deliver the media to the second client device session over the second communications link beginning at the position specified by the bookmark. Notably, the first and second client device sessions



can reside in first and second client device sessions. Alternatively, the first and second client device sessions can reside in a single client device.

In one aspect of the invention, the system can also include an intermediate server disposed between the MODS and the client devices. In particular, the intermediate server can receive the delivered media from the MODS. Also, the intermediate server can identify device properties for each of the client devices. In consequence, the intermediate server can convert the delivered media to a media format compatible with the identified device properties for each client device. Finally, the intermediate server can deliver the converted media to the client devices.

In another aspect of the invention, the system can include a plurality of media-on-demand servers. Each MODS in the plurality of media-on-demand servers can store media in at least one format compatible with a specific device type. Also, the system can include an intermediate server which can identify a device type of a client device. In consequence, the intermediate server can select a MODS in the plurality of media-on-demand servers for delivering the media to the client device. The selected MODS can store the media in a format compatible with the identified device type. Upon being selected, the MODS can deliver the media to the client device in the format compatible with the identified device type.

In yet another aspect of the present invention, the system can further include a backup MODS for storing media in a standard format compatible with a standard device type; and, a conversion filter in the intermediate server. The intermediate server can determine if a MODS in the plurality of media-on-demand servers is available for delivering the media to the client device in a format compatible with the client device. The intermediate server also can select the backup MODS if it is determined that no MODS is available for delivering media to the client device in a format compatible with the client device. The backup MODS can deliver the media to the intermediate server in the format compatible with the identified device type. As a result, the intermediate

server can convert the media to a format compatible with the identified device type in the conversion filter.

**BRIEF DESCRIPTION OF THE DRAWINGS**

There are presently shown in the drawings embodiments which are presently preferred, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown, wherein:

5        FIG. 1 is an exemplary network architecture diagram illustrating various network entities of the invention;

      FIG. 2 is an exemplary flow diagram illustrating the messaging that occurs between a client device and a MODS in the startup process;

10       FIG. 3 illustrates an alternate network architecture for the network illustrated in FIG. 1, wherein the MODS is mediated by an ISP;

      FIG. 4 illustrates the fields in an exemplary bookmark;

      FIG. 5 is an exemplary flow diagram illustrating the messaging that occurs between a MODS and ISP;

15       FIG. 6 illustrates is an exemplary network having a plurality of MODS and a plurality of service providers each servicing a different client device type is disclosed;

**DETAILED DESCRIPTION OF THE INVENTION**

The present invention is a user-controlled, multi-device, media-on-demand system. The media-demand-system of the present system can provide users with the ability to receive delivered media across a network in a client device through a communications link to a media-on-demand server (MODS) regardless of the properties of the client device and the characteristics of the communications link. Specifically, the MODS can deliver particular media to the client device in a format consonant with the properties of the client device which can include device type, acceptable media format and communications link speed and reliability.

Significantly, the user can interrupt the delivery of the delivered media to a client device session in a client device, and subsequently the user can resume the delivery of the delivered media in a seamless manner. Notably, the delivery can resume in a new client device session in a different client device, or in a new client device session in the same client device as the initial client device session. Additionally, the delivery can resume regardless of the timing of the resumption of the delivery and of the properties of the client device through which the user receives the resumed delivery.

Specifically, the user can resume the delivery of a previously interrupted reception of delivered media through a particular client device and a corresponding communications link each of which may have properties which differ from the client device and corresponding communications link of the interrupted delivery. Upon resumption of the delivery, the properties of the new client device can be determined and the format of the delivered media dynamically changed to accommodate the new client device. Moreover, the delivery can resume at a position in the delivered media corresponding to the position in the delivered media which had been most recently delivered to the client device prior to the interruption.

FIG. 1 is an exemplary network architecture diagram illustrating the various network entities of the invention in accordance with the inventive arrangements. As

illustrated in the figure, the major network entities can include a MODS 100, Access Networks 105 and a first client access device 110 exemplarily illustrated as PC Access to Delivered Media consisting of computers 110-1, 110-2 and 110-3. A second client access device 120 is exemplarily illustrated as a TV, PC, Wireless Device Access to Delivered Media consisting of a laptop computer 120-1, a handheld device 120-2, a desktop computer 120-3 and a wireless telephone 120-4.

Client access devices (client devices) 110 and 120 are connected to access networks 105 via connections 107 and 117. Connections 107 and 117 may be wired or wireless connections. Typical wired connections include but are not limited to narrowband POTS, xDSL, Hybrid Fiber Coaxial (HFC) and cable, which can utilize twisted pair copper wires, coaxial cable, fiber or any combination thereof. Typical wireless connections include but are not limited to Cellular, PCS, CDPD, GPRS and Bluetooth each which typically operate at frequencies in the range of 900 MHz to 38 GHz.

The MODS 100 can be comprised of a plurality of access interfaces since it supports access by different kinds of client devices. For example, the MODS 100 can have a Ethernet interface that supports a TCP/IP stack, an X.25 interface to support communication with public data networks that utilize the X.25 protocol, or a T1 interface to support traffic from a public switched telephone network (PSTN).

In addition to supporting various access methodologies, the MODS 100 can store delivered media in a variety of formats, wherein each format is compatible with a particular type of client access device. For example, the MODS 100 may store particular delivered media in MPEG1, MPEG2, Digital Video Broadcast, Quicktime, etc. As a result, the ability to store delivered media in different formats provides the flexibility to serve delivered media to differing types of client devices.

Alternatively, the MODS 100 merely can store a single default format of the delivered media. However, when a request for delivered media is received from a client

device having a particular device type, the MODS 100 can identify the device type and transcode or convert the delivered media from the default format to a format compatible with the identified client device type. For example, if the device type of client access device 120-1 can process delivered media formatted in the WML protocol, upon receiving a request for delivered media from the client access device 120-1, the MODS 100 can transcode the delivered media from the default format to WML.

In one representative embodiment of the invention, whenever a client device, for example client device 110, attempts to access delivered media services through the MODS 100, the MODS 100 can attempt to identify device type of the client device 110. In particular, the MODS 100 can send an initial query to the client device 110 requesting that the client device 110 report its device type. Alternatively, the client device 110 can transmit the device type indication with the initial access request. Hence, the client device type can be identified with a minimum of communications required.

FIG. 2 illustrates an exemplary startup sequence between the MODS 100 and a client device 110-1. As shown in the figure, client device 110-1 can request media delivered from a MODS 100 and can issue a service request 200. MODS 100 can respond with a query 205, requesting the device type for client device 110-1. Client device 110-1 can respond with a device type reply 210. In addition to identifying the client device type, the MODS 100 can request additional information about the configuration of the client device 110-1 by issuing a capability request 215 to the client device 110-1. The client device 110-1 can report its configuration with a capability reply message 220. Alternatively, the MODS can assume a default configuration based on the device type provided in the device type reply 210.

Configuration information can include, but is not limited to screen characteristics, such as size, color or grayscale, I/O capabilities such as speakers, printer types, supported media formats and buffer size. While it might be preferable to acquire the

configuration information dynamically, it should readily be understood by one skilled in the art that alternative methods are possible without departing from the spirit of the invention. For example, the client device configuration information could be acquired at the time a user subscribes to a delivered media subscription. Alternatively, the client device configuration information can be provided manually. Finally, the client device configuration information can be acquired from client device configuration data which can be pre-stored in a database and indexed according to client device type or user.

In a representative embodiment of the present invention, the client device 110-1 can have corresponding configuration information which has been pre-stored in static memory of the client device, such as a Read-Only-Memory (ROM). In consequence, the configuration information can be transferred electronically to the MODS 100 over the network 105, either at the initial access or when the client device 110-1 accesses the network 105. In the latter case, if there are changes to the client device configuration, the ROM can be reprogrammed such that the updated client device information can remain available to the MODS 100.

Returning now to FIG. 2, the delivery of media from the MODS 100 to clients 100 can be a for-fee service wherein the user pays a fee in exchange for the on-demand delivery of media content, for example a movie or song. Accordingly, for security purposes, an authentication exchange between the client device 110 and the MODS 100 can be used to facilitate access to services and billing. There are various methods that are well known in the art that can be used to authenticate and grant access to particular network services. For example, the Secured Socket Layer (SSL) protocol uses a public key cryptography to authenticate and encrypt information that is transferred over the Internet using TCP/IP. Authentication and encryption can be used to secure the transmission of transaction messages 225 and 230 which can further the goals of ensuring a secure transaction.

Due to the varied nature of the type of communication links that can be used for

communication between the client device 110-1 and the MODS 100, the MODS 100 can attempt to evaluate the connection by using, for example, pacing stream 235. Hence, MODS 100 could use the pacing stream 235 consisting of a regulated stream of messages sent to client device 110-1, in order to ascertain the bandwidth of the connection. Metrics such as the arrival times and the interstitial times can be measured by the client device 110-1 and reported to the MODS 100 through a respond with bandwidth message 240. These metrics then can be used to determine network latency and the bandwidth requirements. Although the metrics can be measured by the MODS 100, in one representative embodiment, the metrics are measured by the client device 110-1.

Referring now to FIG. 3, an alternative architecture to that disclosed in FIG. 1 is shown, wherein access to the MODS 100 is mediated by an ISP server 300. From a network provider perspective, the MODS 100 does not have to be the same operating entity as that of the ISP server 300. Hence, whenever the client device 110-1 attempts to access a service offered by the MODS 100, the ISP 300 can mediate the transaction. Specifically, in one embodiment of the invention, a capability exchange can precede the MODS transaction for the delivered media. During the capability exchange, the ISP 300 can query the client device 110-1 for the client device type and can mediate the transaction between the MODS 100 and the client device 110-1 according to the identified client device type. In a further aspect of the invention, since the MODS 100 can store the delivered media, the delivered media can be sent to the client device 110-1 through the ISP server 300.

Significantly, the MODS 100 can store bookmarks within the local memory of the MODS 100. The bookmarks can be used in the conventional sense inasmuch as the bookmarks can store a location in the delivered media related to a position in the delivered media which most recently had been transmitted to the client device 110-1. Notably, the bookmark does not necessarily store the position in the delivered media



which had been transmitted most recently to the client device 110-1. Rather, the bookmark also can store a position preceding that position which had been most recently transmitted to the client device 110-1 so that the resumption of delivery of the delivered media at a later time can overlap the delivered media previously transmitted to the client-device 110-1.

While the MODS 100 can retain a subscriber record which can contain a bookmark indicating the subscribers delivered media history, in one embodiment of the present invention, the ISP 300 can retain the subscriber record and the MODS 100 can retain at least a partial copy of the subscriber record. One reason for this system of dual retention is that a user may have several bookmarks of which many may never be used. Notably, the several bookmarks may have been created based upon the delivery of media to a single client device or to a plurality of different client devices having differing formats. As an example, in the architecture shown in FIG. 3, since the ISP 300 provides the delivered media received from the MODS 100 to the client device 110-1, the ISP 300 maintains the subscriber record.

In a further aspect of the invention, copies of the bookmark can be stored both at the ISP 300 and at the MODS 100. In consequence, in the event the copies of the bookmark fall out of synchronization, such as can happen whenever there is a power outage during a software upgrade, then the user of a client device 110-1 can be given the option to select which copy of the bookmark is the correct copy. Once the correct version of the bookmark has been identified, the correct version can be used to overwrite the incorrect version of the bookmark. The process of updating mismatched copies of the same bookmark can be encoded in a Java applet. Specifically, when a request is made to access information in a time code field of the bookmark record stored in the ISP 300, the copy of the bookmark stored in the MODS 100 can be checked to ensure that the time code entries are the same. In the case where the time code entries are not the same, the Java applet can request that the user select the

correct bookmark.

FIG. 4 illustrates an exemplary bookmark. Information contained in the exemplary bookmark can be categorized into three major categories - data used to uniquely identify the user 400, data used to uniquely identify the delivered media 405 and data unique to the last presentation of at least a portion of particular delivered media 410, 415, 420, 425, 430, 435, 440. Finally, the bookmark can include a duration field 445 for indicating the last viewed segment or the cumulative time for the completed portions of delivered media. Still, it should be readily understood by one skilled in the art that other information may be included without departing from the spirit of the invention. For example, the bookmark can include user device type and capability information, device type configuration data as well as other security information. If there are a number of bookmarks associated with the delivery of particular delivered media to a particular user, the entries in the table can be duplicated to represent each bookmark.

Notably, the data unique to the last presentation of at least a portion of particular delivered media can include, but is not limited to, a MODS identification 415 which can be used to identify a particular MODS from which delivered media can be transmitted to a client in a particular delivery session, a delivered media identifier 420 for identifying particular delivered media to be delivered from the current MODS, a time code 425 of the last viewed second of the delivered media, a time code 430 of the beginning of the last scene/frame/tract in progress, a last format indicator 430 which can specify the format of delivered media last delivered to a client device, for example, MPEG or WML, and a transaction identifier 440 that can be used as a reference to the current transaction between the MODS or ISP and the client device.

FIG. 5 is a communication flow diagram which can illustrate the communication occurring between the MODS 100 and the ISP 300 as shown in FIG. 3. The steps used to determine the client device type and delivered media format are not shown since

they are similar to that illustrated in FIG. 2, the only difference being that the determination is performed within an ISP. As shown in FIG. 5, presumably in response to a user request to receive specified delivered media, a MODS 100 can be selected to deliver the specified delivered media.

5       Once a MODS 100 has been selected, the ISP server 300 can issue a service request 500 to the MODS 100. The service request 500 can contain the delivered media identification and format. Subsequently, the MODS 100 can acknowledge the service request 500 with a response 505. While often it can be preferable to ensure the security of an online transaction, for example the online verification of a user identity and corresponding payment authorization as shown in steps 510 and 515, one skilled in  
10       the art will recognize that the security measures illustrated in FIG. 5 are optional.

15       Following the securing of the communications link in steps 510 and 515, the ISP 300 can confirm the availability of the appropriate format of the delivered media by transmitting an availability message to the MODS 100 in step 520. Additionally, in order to determine the bandwidth requirements, the ISP 300 can send a pacing message 525 to the MODS 100. In response, the MODS 100 can send to the ISP 300 a response 530 having the appropriate statistics/measurements necessary to determine the required bandwidth. Still, as one skilled in the art will recognize, steps 525 and 530 are optional and the absence of steps 525 and 530 or the addition of supplemental steps  
20       will not detract from the spirit of the invention. For instance, in an alternative embodiment, steps 525 and 530 can be periodically repeated to evaluate and dynamically adjust the bandwidth settings to ensure acceptable Quality of Service.

25       The ISP 300 can query a bookmark associated with the requested delivered media and the requesting user. From the queried bookmark, the ISP 300 can identify a position from which to resume (or begin as the case may be) delivery of the requested delivered media. Specifically, in step 535 the ISP 300 can request the MODS 100 to begin transmission of the delivered media at the time code indicated by the specified

bookmark. After determining the particular position within the delivered media corresponding to the time code in the bookmark, the MODS 100 can resume (or begin) transmission of the delivered media as shown in step 540.

After some time has elapsed, a terminate request for terminating transmission of the delivered media can be received in the ISP 300, possibly from the client device. In response, a request for termination can be transmitted to the MODS 100 in step 545. In response, in step 550 the MODS 100 can terminate the transmission of the delivered media. Additionally, in a representative embodiment in which the ISP 300 stores the bookmark, the time code can be sent from the MODS 100 to the ISP 300. Moreover, other suitable information necessary for creating a new bookmark and for generating user charges for receiving the delivered media can be sent to the ISP 300.

FIG. 6 illustrates a further embodiment of the invention, in which a plurality of MODS 100 can provide delivered media in various formats to a plurality of ISPs 610. Each format can be selected according to the requirements of various client device types associated with one of a plurality of requesting client devices 615, 620. Referring to FIG. 6, an exemplary network having a plurality of MODS 100 and a plurality of ISPs 610 each servicing a different client device type is disclosed. ISP 610-2 interconnects wireless client devices 620-1, 620-2 and 620-3 to the Internet 305. Similarly, ISP 610-1 interconnects client devices 615-1 and 615-2 to the Internet network 605 via a coaxial cable. In the depicted arrangement, a subscriber can have multiple devices each having its own methodology of accessing the services provided by the MODS 100 through a different ISPs 610. A plurality of MODS 100 such as MODS 100-1, 100-2 and 100-3 can be deployed within the network to more efficiently serve the ISPs 610.

Notably, an Internet Media Aggregator (IMA) 600 can be provided to store bookmarks and to facilitate the conversion of delivered media from a format compatible with one client device type to a format compatible with another client device type. Specifically, delivered media in a format compatible with a first client device type can be

retrieved from the MODS 100 by the IMA 600 and dispatched to the first client device without modification. The delivered media in the MODS 100 also can be retrieved by the IMA 600 and dispatched to a second client device. With regard to the second client device however, the IMA 600 can convert the delivered media from a format compatible with the first client device type into a format compatible with the second destination device type.

For example, with reference to FIG. 6, consider the case where a user is at home and has a desire to watch an interactive video presentation on client device 615-2. Client device 615-2 can be used to access the Internet 305 via the ISP server 610-1. The interactive video presentation can be stored in the MODS 100-1 in a global format, for example MPEG-II, recognizable by the client device 615-2. ISP server 610-1 can request IMA 600 to acquire the interactive video presentation from the MODS 100-1. Once the IMA 600 receives the video presentation, it can determine the appropriate format in which to deliver the presentation to the client device 615-2. Based upon the configuration information of client device 615-2, IMA 600 can determine that there is no need to convert the format of the presentation since the client device is capable of accepting an MPEG-II format. Therefore, IMA 600 can deliver the video presentation to the client device 615-2 via ISP server 610-1.

However, due to prior engagements, the user may have to leave home for the airport where he/she is stranded for a few hours. Before leaving home, the user terminates the transmission of the presentation. In consequence, a bookmark of the position in the presentation where the viewing stopped can be recorded in a bookmark stored in the memory of IMA 600. Subsequently, while waiting at the airport, the user can access the network 305 via ISP server 610-2 using client device 620-1. As a result, the ISP server 610-2 can request that the IMA 600 resume the transmission of the interactive video presentation. In particular, the IMA 600 can consult the bookmark and can determine the position in the presentation which had been most recently

transmitted to the user's home prior to the user's termination of the transmission.

Once the position has been determined, the IMA 600 also can determine the format compatible with the client device type of the client device 620-1. Specifically, the format can be determined from the configuration information of client device 620-1.

5 Suppose the client device 620-1 can only accept the presentation of delivered media in QuickTime format. As such, IMA 620-1 can convert the MPEG2 format of the delivered media received from the MODS 100-1 into QuickTime format compatible with the client device 620-1. Once the conversion from MPEG2 to QuickTime is complete, IMA 600 can deliver the video presentation to the client device 620-1 via the ISP server 610-2 in  
10 a format suitable for receipt by the client device 620-1. Additionally, the IMA 610-2 can request the transmission of the presentation to begin at a point in the presentation defined by the time code field of the bookmark.

In an alternative embodiment, different formats corresponding to each of the supported device types can be stored on one or more of the servers. For example,  
15 before doing the conversion from MPEG2 to QuickTime, the IMA 600 could have queried MODS 100-2 to determine if a QuickTime format of the video presentation was already stored in the MODS 100-2. Since MODS 100-2 already had a QuickTime format copy of the presentation, the IMA 600 could have download that copy to the MODS 100-2 rather than having to perform a duplicate conversion of the presentation  
20 from MPEG2 to QuickTime.

A further embodiment of the invention can arise in the circumstance of the present example in which the user had forgotten to terminate the session at home because of an urgency to arrive at the airport by a particular time. Once the user accesses the ISP 300 from the airport using client device 620-1, the user can request  
25 that the IMA 600 terminate the session in progress with client device 615-1. Subsequently, the user can request that the IMA 600 continue the video presentation session on the client device 620-1.

Notably, since no bookmark previously existed because the user forgot to terminate the session at home, the user can be given the option of estimating a time code that can be proportional to the time of the presentation length. For example, if the video presentation was 2.5 hours (2hrs:30mins:00secs), then entering a time code of 1:30:23 would correspond to a time stamp of 1 hour, 30 minutes and 23 seconds. Hence, if the user wanted to watch the last hour of the video presentation, then the user would enter 01:30:00 as the time code. In order to differentiate this time code from an actual time code, an asterisk (\*) could be placed next to the time code to show that it was fictitious.

After the time code has been entered, the IMA 600 can attempt to find a QuickTime format of the video presentation stored on a MODS 100 or convert delivered media in MPEG2 format in MODS 100-1 to QuickTime format. The video presentation then can be streamed from the IMA 600 to the client device 620-1 starting from the entered time code.

A yet further embodiment of the invention can arise in the circumstance of the present example in which the user bookmarked the video presentation before leaving home but intentionally allowed the video presentation to run since someone else at home was watching the video presentation. In this case, when the user arrives at the airport, if the session at home is still in progress, the user can request that the IMA 600 create an additional stream for viewing the presentation on client device 620-1. The user can be charged for additional presentation time and the presentation can begin from the position indicated in the bookmark that the user created before leaving home.

Notably, with regard to the bookmark described herein, it should readily be understood by one skilled in the art that a bookmark does not have to represent the exact point at which the media was discontinued. To compensate for delay or other transitory loss, the bookmark may be placed at a point prior to the actual point of discontinuance of transmission. For example, using a time based bookmark reference,

the bookmark may be placed at ten seconds prior to the actual point of discontinuance. Alternately, the bookmark could be placed at the point of discontinuance, and whenever resumption of the media occurs, the resumption is started at a point, for example, 10 seconds prior to the actual point of discontinuance. In addition to using relative time or location based methods for the bookmark, other schemes employing translation of the physical location or time or any combination thereof, may be utilized.

The present invention can be realized in hardware, software, or a combination of hardware and software. Machine readable storage according to the present invention can be realized in a centralized fashion in one computer system, or in a distributed fashion where different elements are spread across several interconnected computer systems. Any kind of computer system or other apparatus adapted for carrying out the methods described herein is acceptable. A typical combination of hardware and software could be a general purpose computer system with a computer program that, when being loaded and executed, controls the computer system such that it carries out the methods described herein. The present invention can also be embedded in a computer program product which comprises all the features enabling the implementation of the methods described herein, and which when loaded in a computer system is able to carry out these methods.

A computer program in the present context can mean any expression, in any language, code or notation, of a set of instructions intended to cause a system having an information processing capability to perform a particular function either directly or after either or both of the following: (a) conversion to another language, code or notation; and (b) reproduction in a different material form. The invention disclosed herein can be a method embedded in a computer program which can be implemented by a programmer using commercially available development tools.



**CLAIMS**

1 1. A method for providing configurable access to media in a media-on-demand  
2 system comprising the steps of:  
3 delivering the media to a first client device through a first communications link;  
4 recording a bookmark specifying a position in the media; and  
5 delivering the media to a second client device through a second communications  
6 link, said delivery to said second client device beginning at said position specified by  
7 said recorded bookmark.

1 2. The method according to claim 1, further comprising the steps of:  
2 identifying device properties for each of said first and second client devices; and,  
3 delivering the media to said first and second client devices through said  
4 respectively established first and second communications links, the media delivered in  
5 a format compatible with said identified device properties.

1 3. The method according to claim 2, wherein the media is stored in a media-on-  
2 demand server (MODS) and delivered to said first and said second client devices via  
3 said first and said second communications link respectively.

1 4. The method according claim 3, wherein said step of delivering the media to said  
2 first client device via said first communications link, comprises:  
3 receiving the media from said MODS in an intermediate server;  
4 in said intermediate server, converting the media to a format compatible with  
5 said identified device properties of said first client device; and  
6 delivering said converted media to said first client device via said first  
7 communications link.

1 5. The method according to claim 3, wherein said step of delivering the media to a  
2 second client device via said second communications link, comprises:  
3 receiving the media in an intermediate server from said MODS;  
4 in said intermediate server, converting the media to a format compatible with  
5 said identified device properties of said second client device; and  
6 delivering said converted media to said second client device via said second  
7 communications link.

1 6. The method according claim 3, further comprising:  
2 storing the media in selected ones of a plurality of media-on-demand servers,  
3 each MODS in said plurality of media-on-demand servers storing the media in at least  
4 one format compatible with a selected device type;  
5 selecting a MODS for delivering the media to said first client device, said  
6 selected MODS having stored thereon the media in a format compatible with said first  
7 client device; and  
8 delivering from said selected MODS the media in a format compatible with said  
9 first client device.

1 7. The method according to claim 6, wherein said selecting step further comprises:  
2 determining if a MODS is available for delivering the media to said first client  
3 device in a format compatible with said first client device;  
4 if it is determined that a MODS is not available for delivering the media to said  
5 first client device in a format compatible with said first client device, selecting a MODS  
6 for delivering the media to said first client device, said selected MODS containing the  
7 media in a standard format, and converting the media in said standard format to a  
8 format compatible with said first client device.

1 8. The method according claim 3, further comprising:  
2 storing the media in selected ones of a plurality of media-on-demand servers,  
3 each MODS in said plurality of media-on-demand servers storing the media in at least  
4 one format compatible with a selected device type;  
5 selecting a MODS for delivering the media to said second client device, said  
6 selected MODS having stored thereon the media in a format compatible with said  
7 second client device; and  
8 delivering from said selected MODS the media in a format compatible with said  
9 second client device.

1 9. The method according to claim 8, wherein said selecting step further comprises:  
2 determining if a MODS is available for delivering the media to said second client  
3 device in a format compatible with said second client device;  
4 if it is determined that a MODS is not available for delivering the media to said  
5 second client device in a format compatible with said second client device, selecting a  
6 MODS for delivering the media to said second client device, said selected MODS  
7 containing the media in a standard format, and converting the media in said standard  
8 format to a format compatible with said second client device.

1 10. A user-controlled media-on-demand system comprising:  
2 a media-on-demand server (MODS) for delivering media to client device  
3 sessions;  
4 a first communications link between said MODS and a first client device session;  
5 a second communications link between said MODS and a second client device  
6 session; and,  
7 a bookmark in said MODS specifying a position in said delivered media;  
8 said MODS delivering media to said first client device session over said first

communications link;

said MODS delivering said media to said second client device session over said second communications link beginning at said position specified by said bookmark.

11. The system according claim 10, wherein said first and second client device sessions reside in first and second client devices respectively.

12. The system according claim 10, wherein said first and second client device sessions reside in a single client device.

13. The system according claim 11, further comprising:  
an intermediate server disposed between said MODS and said first and second client devices;

said intermediate server receiving said delivered media from said MODS;

said intermediate server identifying device properties for each of said client devices;

said intermediate server converting said delivered media to a media format compatible with said identified device properties for each client device; and

said intermediate server delivering said converted media to said client devices.

14. The system according claim 12, further comprising:

an intermediate server disposed between said MODS and said single client device;

said intermediate server receiving said delivered media from said MODS;

said intermediate server identifying device properties for said single client device;

said intermediate server converting said delivered media to a media format compatible with said identified device properties for said single client device; and

8           said intermediate server delivering said converted media to said single client  
9 device.

1    15.    The system according to claim 10, further comprising:

2           a plurality of media-on-demand servers, each said MODS in said plurality of  
3 media-on-demand servers storing media in at least one format compatible with specific  
4 device properties; and,

5           an intermediate server;

6           said intermediate server identifying device properties of a client device  
7 containing a client device session;

8           said intermediate server selecting a MODS in said plurality of media-on-demand  
9 servers for delivering said media to said client device;

10          said selected MODS storing said media in a format compatible with said  
11 identified device properties;

12          said selected MODS delivering said media to said client device in said format  
13 compatible with said identified device properties.

1    16.    The system according claim 15, further comprising:

2           a backup MODS for storing media in a standard format; and,

3           a conversion filter in said intermediate server;

4           said intermediate server determining if a MODS in said plurality of media-on-  
5 demand servers is available for delivering said media to a client device in a format  
6 compatible with said client device;

7           said intermediate server selecting said backup MODS if it is determined that no  
8 MODS is available for delivering media to said client device in a format compatible with  
9 said client device;

10          said backup MODS delivering said media to said intermediate server in said

standard format;

said intermediate server converting said media to a format compatible with said client device in said conversion filter.

17. A method for providing configurable access to media in a media-on-demand system comprising:

delivering the media to a first client device in a format compatible with said first client device;

interrupting said delivery of said media;

recording a bookmark specifying a position in the media when said interruption occurred; and

resuming delivery of the media to a second client device, said resumed delivery beginning at a position in the media specified by said recorded bookmark.

18. The method according to claim 17, further comprising the steps of:

identifying a device type for each of said first and second client devices;

delivering the media to said first client device in a format compatible with said identified device type for said first client device; and,

delivering the media to said second client device in a format compatible with said identified device type for said second client device.

19. A machine readable storage having stored thereon, a computer program having a plurality of code sections for providing configurable access to media in a media-on-demand system, said code sections executable by a machine for causing the machine to perform the steps of:

delivering the media to a first client device in a format compatible with said first client device;

7 interrupting said delivery of said media;  
8 recording a bookmark specifying a position in the media where said interruption  
9 occurred; and  
10 resuming delivery of the media to a second client device, said resumed delivery  
11 beginning at a position in the media specified by said recorded bookmark.

1 20. The machine readable storage according to claim 19, further comprising the  
2 steps of:

3 identifying a device type for each of said first and second client devices;  
4 delivering the media to said first client device in a format compatible with said  
5 identified device type for said first client device; and,  
6 delivering the media to said second client device in a format compatible with said  
7 identified device type for said second client device.

8 21. A method for providing configurable access to media in a media-on-demand  
9 system comprising the steps of:

10 delivering the media to a first client device session through a first  
11 communications link;  
12 recording a bookmark specifying a position in the media; and  
13 delivering the media to a second client device session through a second  
14 communications link, said delivery to said second client device session beginning at  
15 said position specified by said recorded bookmark.

1 22. The method according to claim 21, wherein said first and second client device  
2 sessions reside in a single client device.

1 23. The method according to claim 22, further comprising the steps of:

identifying device properties for said single client device; and,  
delivering the media to said first and second client device sessions in said single client device through said respectively established first and second communications links, the media delivered in a format suitable for said identified device properties.

24. The method according to claim 22, wherein the media is stored in a media-on-demand server (MODS) and delivered to said first and said second client device sessions via said first and said second communications link respectively.

25. The method according claim 24, wherein said step of delivering the media to said first and second client device sessions via said first and second communications links, comprises:

receiving the media from said MODS in an intermediate server;  
in said intermediate server, converting the media to a format compatible with said identified device properties of said single client device; and  
delivering said converted media to said first and second client device sessions via said first and second communications links respectively.

26. The method according claim 24, further comprising:

storing the media in selected ones of a plurality of media-on-demand servers, each MODS in said plurality of media-on-demand servers storing the media in at least one format compatible with a selected device type;

selecting a MODS for delivering the media to said single client device, said selected MODS having stored thereon the media in a format compatible with said single client device; and

delivering from said selected MODS the media in a format compatible with said single client device.



1     27.    The method according to claim 26, wherein said selecting step further  
2     comprises:

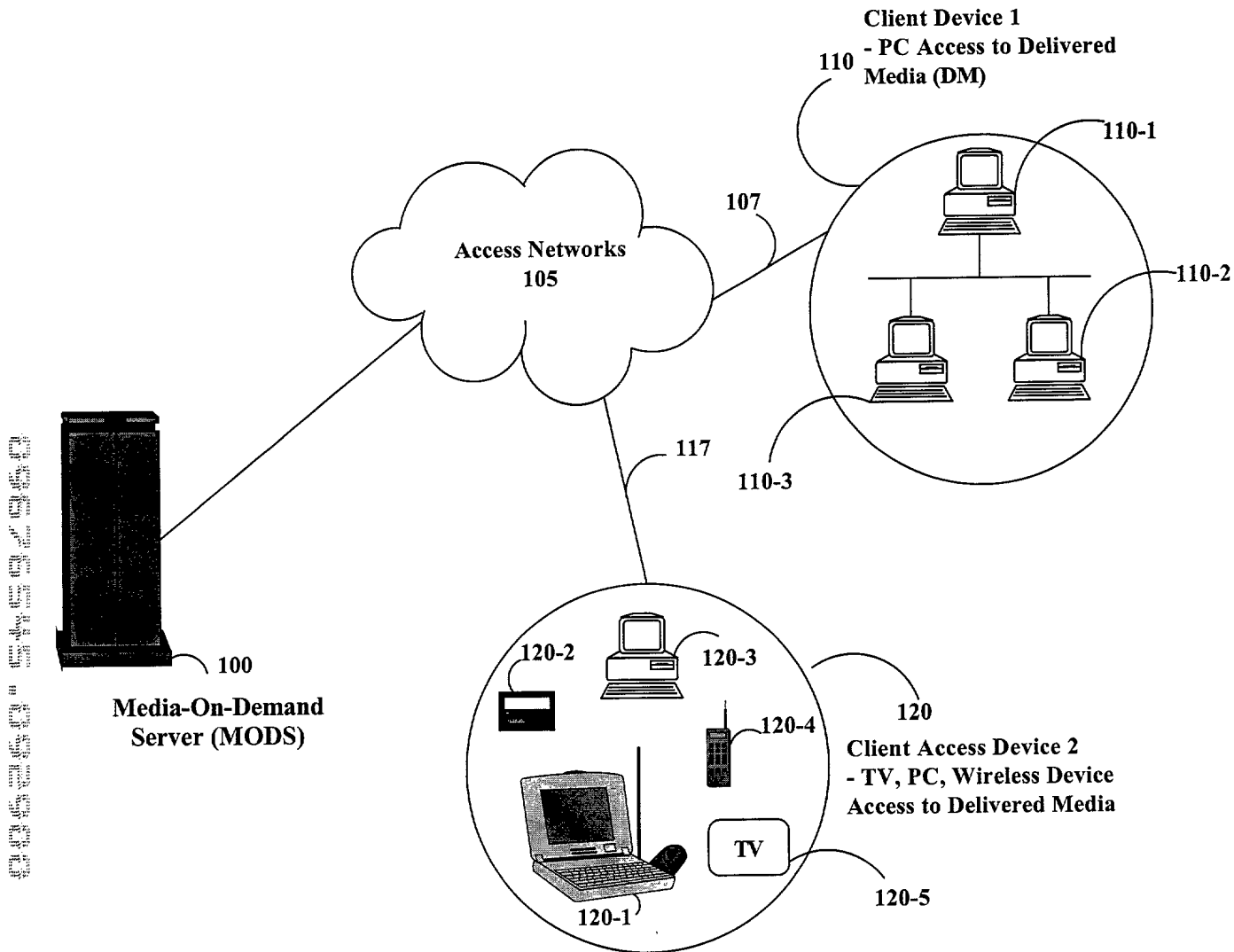
3           determining if a MODS is available for delivering the media to said single client  
4     device in a format compatible with said single client device;

5           if it is determined that a MODS is not available for delivering the media to said  
6     single client device in a format compatible with said single client device, selecting a  
7     MODS for delivering the media to said single client device, said selected MODS  
8     containing the media in a standard format, and converting the media in said standard  
1     format to a format compatible with said single client device.

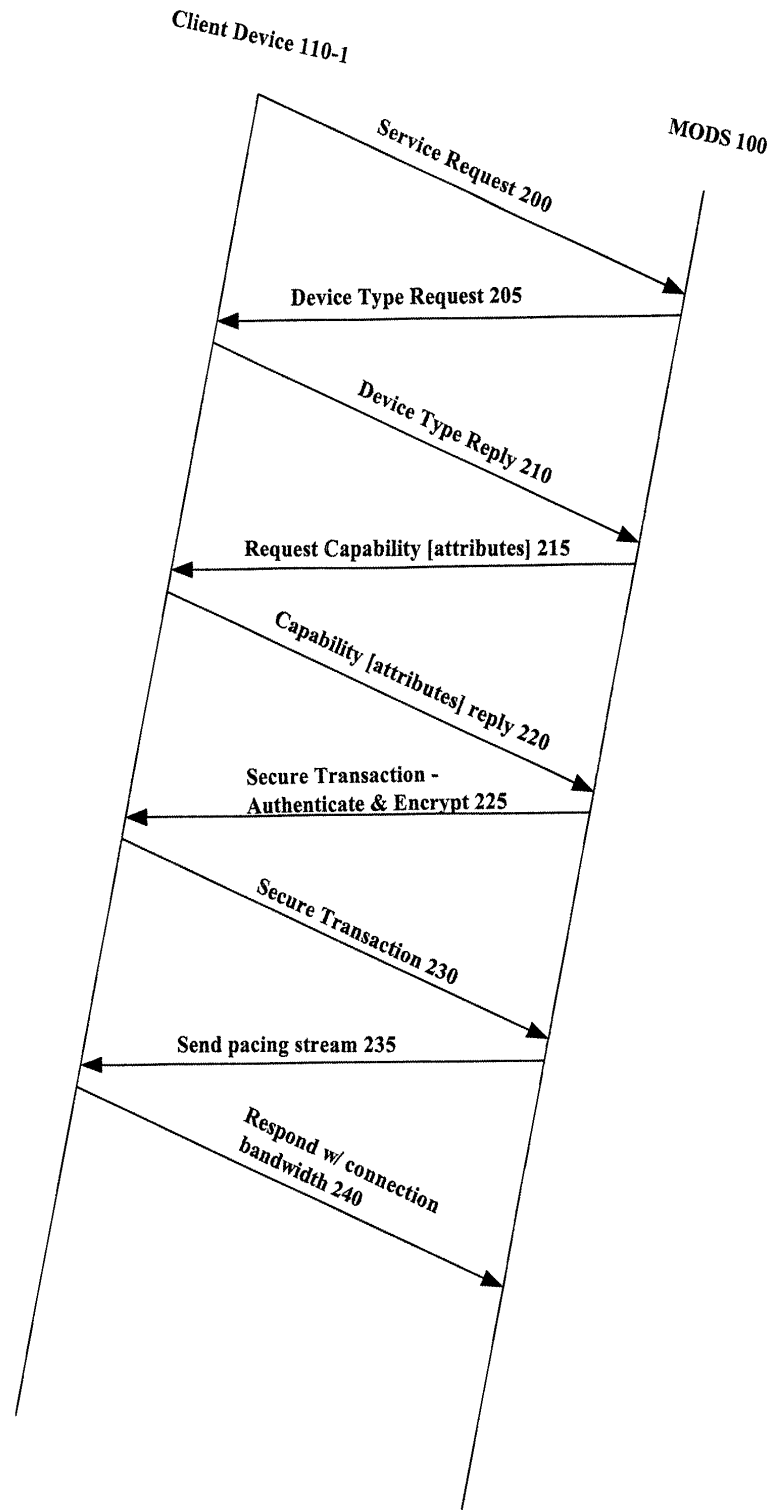
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000  
1001  
1002  
1003  
1004  
1005  
1006  
1007  
1008  
1009  
1010  
1011  
1012  
1013  
1014  
1015  
1016  
1017  
1018  
1019  
1020  
1021  
1022  
1023  
1024  
1025  
1026  
1027  
1028  
1029  
1030  
1031  
1032  
1033  
1034  
1035  
1036  
1037  
1038  
1039  
1040  
1041  
1042  
1043  
1044  
1045  
1046  
1047  
1048  
1049  
1050  
1051  
1052  
1053  
1054  
1055  
1056  
1057  
1058  
1059  
1060  
1061  
1062  
1063  
1064  
1065  
1066  
1067  
1068  
1069  
1070  
1071  
1072  
1073  
1074  
1075  
1076  
1077  
1078  
1079  
1080  
1081  
1082  
1083  
1084  
1085  
1086  
1087  
1088  
1089  
1090  
1091  
1092  
1093  
1094  
1095  
1096  
1097  
1098  
1099  
1100  
1101  
1102  
1103  
1104  
1105  
1106  
1107  
1108  
1109  
1110  
1111  
1112  
1113  
1114  
1115  
1116  
1117  
1118  
1119  
1120  
1121  
1122  
1123  
1124  
1125  
1126  
1127  
1128  
1129  
1130  
1131  
1132  
1133  
1134  
1135  
1136  
1137  
1138  
1139  
1140  
1141  
1142  
1143  
1144  
1145  
1146  
1147  
1148  
1149  
1150  
1151  
1152  
1153  
1154  
1155  
1156  
1157  
1158  
1159  
1160  
1161  
1162  
1163  
1164  
1165  
1166  
1167  
1168  
1169  
1170  
1171  
1172  
1173  
1174  
1175  
1176  
1177  
1178  
1179  
1180  
1181  
1182  
1183  
1184  
1185  
1186  
1187  
1188  
1189  
1190  
1191  
1192  
1193  
1194  
1195  
1196  
1197  
1198  
1199  
1200  
1201  
1202  
1203  
1204  
1205  
1206  
1207  
1208  
1209  
1210  
1211  
1212  
1213  
1214  
1215  
1216  
1217  
1218  
1219  
1220  
1221  
1222  
1223  
1224  
1225  
1226  
1227  
1228  
1229  
1230  
1231  
1232  
1233  
1234  
1235  
1236  
1237  
1238  
1239  
1240  
1241  
1242  
1243  
1244  
1245  
1246  
1247  
1248  
1249  
1250  
1251  
1252  
1253  
1254  
1255  
1256  
1257  
1258  
1259  
1260  
1261  
1262  
1263  
1264  
1265  
1266  
1267  
1268  
1269  
1270  
1271  
1272  
1273  
1274  
1275  
1276  
1277  
1278  
1279  
1280  
1281  
1282  
1283  
1284  
1285  
1286  
1287  
1288  
1289  
1290  
1291  
1292  
1293  
1294  
1295  
1296  
1297  
1298  
1299  
1300  
1301  
1302  
1303  
1304  
1305  
1306  
1307  
1308  
1309  
1310  
1311  
1312  
1313  
1314  
1315  
1316  
1317  
1318  
1319  
1320  
1321  
1322  
1323  
1324  
1325  
1326  
1327  
1328  
1329  
1330  
1331  
1332  
1333  
1334  
1335  
1336  
1337  
1338  
1339  
1340  
1341  
1342  
1343  
1344  
1345  
1346  
1347  
1348  
1349  
1350  
1351  
1352  
1353  
1354  
1355  
1356  
1357  
1358  
1359  
1360  
1361  
1362  
1363  
1364  
1365  
1366  
1367  
1368  
1369  
1370  
1371  
1372  
1373  
1374  
1375  
1376  
1377  
1378  
1379  
1380  
1381  
1382  
1383  
1384  
1385  
1386  
1387  
1388  
1389  
1390  
1391  
1392  
1393  
1394  
1395  
1396  
1397  
1398  
1399  
1400  
1401  
1402  
1403  
1404  
1405  
1406  
1407  
1408  
1409  
1410  
1411  
1412  
1413  
1414  
1415  
1416  
1417  
1418  
1419  
1420  
1421  
1422  
1423  
1424  
1425  
1426  
1427  
1428  
1429  
1430  
1431  
1432  
1433  
1434  
1435  
1436  
1437  
1438  
1439  
1440  
1441  
1442  
1443  
1444  
1445  
1446  
1447  
1448  
1449  
1450  
1451  
1452  
1453  
1454  
1455  
1456  
1457  
1458  
1459  
1460  
1461  
1462  
1463  
1464  
1465  
1466  
1467  
1468  
1469  
1470  
1471  
1472  
1473  
1474  
1475  
1476  
1477  
1478  
1479  
1480  
1481  
1482  
1483  
1484  
1485  
1486  
1487  
1488  
1489  
1490  
1491  
1492  
1493  
1494  
1495  
1496  
1497  
1498  
1499  
1500  
1501  
1502  
1503  
1504  
1505  
1506  
1507  
1508  
1509  
1510  
1511  
1512  
1513  
1514  
1515  
1516  
1517  
1518  
1519  
1520  
1521  
1522  
1523  
1524  
1525  
1526  
1527  
1528  
1529  
1530  
1531  
1532  
1533  
1534  
1535  
1536  
1537  
1538  
1539  
1540  
1541  
1542  
1543  
1544  
1545  
1546  
1547  
1548  
1549  
1550  
1551  
1552  
1553  
1554  
1555  
1556  
1557  
1558  
1559  
1560  
1561  
1562  
1563  
1564  
1565  
1566  
1567  
1568  
1569  
1570  
1571  
1572  
1573  
1574  
1575  
1576  
1577  
1578  
1579  
1580  
1581  
1582  
1583  
1584  
1585  
1586  
1587  
1588  
1589  
1590  
1591  
1592  
1593  
1594  
1595  
1596  
1597  
1598  
1599  
1600  
1601  
1602  
1603  
1604  
1605  
1606  
1607  
1608  
1609  
1610  
1611  
1612  
1613  
1614  
1615  
1616  
1617  
1618  
1619  
1620  
1621  
1622  
1623  
1624  
1625  
1626  
1627  
1628  
1629  
1630  
1631  
1632  
1633  
1634  
1635  
1636  
1637  
1638  
1639  
1640  
1641  
1642  
1643  
1644  
1645  
1646  
1647  
1648  
1649  
1650  
1651  
1652  
1653  
1654  
1655  
1656  
1657  
1658  
1659  
1660  
1661  
1662  
1663  
1664  
1665  
1666  
1667  
1668  
1669  
1670  
1671  
1672  
1673  
1674  
1675  
1676  
1677  
1678  
1679  
1680  
1681  
1682  
1683  
1684  
1685  
1686  
1687  
1688  
1689  
1690  
1691  
1692  
1693  
1694  
1695  
1696  
1697  
1698  
1699  
1700  
1701  
1702  
1703  
1704  
1705  
1706  
1707  
1708  
1709  
1710  
1711  
1712  
1713  
1714  
1715  
1716  
1717  
1718  
1719  
1720  
1721  
1722  
1723  
1724  
1725  
1726  
1727  
1728  
1729  
1730  
1731  
1732  
1733  
1734  
1735  
1736  
1737  
1738  
1739  
1740  
1741  
1742  
1743  
1744  
1745  
1746  
1747  
1748  
1749  
1750  
1751  
1752  
1753  
1754  
1755  
1756  
1757  
1758  
1759  
1760  
1761  
1762  
1763  
1764  
1765  
1766  
1767  
1768  
1769  
1770  
1771  
1772  
1773  
1774  
1775  
1776  
1777  
1778  
1779  
1780  
1781  
1782  
1783  
1784  
1785  
1786  
1787  
1788  
1789  
1790  
1791  
1792  
1793  
1794  
1795  
1796  
1797  
1798  
1799  
1800  
1801  
1802  
1803  
1804  
1805  
1806  
1807  
1808  
1809  
1810  
1811  
1812  
1813  
1814  
1815  
1816  
1817  
1818  
1819  
1820  
1821  
1822  
1823  
1824  
1825  
1826  
1827  
1828  
1829  
1830  
1831  
1832  
1833  
1834  
1835  
1836  
1837  
1838  
1839  
1840  
1841  
1842  
1843  
1844  
1845  
1846  
1847  
1848  
1849  
1850  
1851  
1852  
1853  
1854  
1855  
1856  
1857  
1858  
1859  
1860  
1861  
1862  
1863  
1864  
1865  
1866  
1867  
1868  
1869  
1870  
1871  
1872  
1873  
1874  
1875  
1876  
1877  
1878  
1879  
1880  
1881  
1882  
1883  
1884  
1885  
1886  
1887  
1888  
1889  
1890  
1891  
1892  
1893  
1894  
1895  
1896  
1897  
1898  
1899  
1900  
1901  
1902  
1903  
1904  
1905  
1906  
1907  
1908  
1909  
1910  
1911  
1912  
1913  
1914  
1915  
1916  
1917  
1918  
1919  
1920  
1921  
1922  
1923  
1924  
1925  
1926  
1927  
1928  
1929  
1930  
1931  
1932  
1933  
1934  
1935  
1936  
1937  
1938  
1939  
1940  
1941  
1942  
1943  
1944  
1945  
1946  
1947  
1948  
1949  
1950  
1951  
1952  
1953  
1954  
1955  
1956  
1957  
1958  
1959  
1960  
1961  
1962  
1963  
1964  
1965  
1966  
1967  
1968  
1969  
1970  
1971  
1972  
1973  
1974  
1975  
1976  
1977  
1978  
1979  
1980  
1981  
1982  
1983  
1984  
1985  
1986  
1987  
1988  
1989  
1990  
1991  
1992  
1993  
1994  
1995  
1996  
1997  
1998  
1999  
2000  
2001  
2002  
2003  
2004  
2005  
2006  
2007  
2008  
2009  
2010  
2011  
2012  
2013  
2014  
2015  
2016  
2017  
2018  
2019  
2020  
2021  
2022  
2023  
2024  
2025  
2026  
2027  
2028  
2029  
2030  
2031  
2032  
2033  
2034  
2035  
2036  
2037  
2038  
2039  
2040  
2041  
2042  
2043  
2044  
2045  
2046  
2047  
2048  
2049  
2050  
2051  
2052  
2053  
2054  
2055  
2056  
2057  
2058  
2059  
2060  
2061  
2062  
2063  
2064  
2065  
2066  
2067  
2068  
2069  
2070  
2071  
2072  
2073  
2074  
2075  
2076  
2077  
2078  
2079  
2080  
2081  
2082  
2083  
2084  
2085  
2086  
2087  
2088  
2089  
2090  
2091  
2092  
2093  
2094  
2095  
2096  
2097  
2098  
2099  
2100  
2101  
2102  
2103  
2104  
2105  
2106  
2107  
2108  
2109  
2110  
2111  
2112  
2113  
2114  
2115  
2116  
2117  
2118  
2119  
2120  
2121  
2122  
2123  
2124  
2125  
2126  
2127  
2128  
2129  
2130  
2131  
2132  
2133  
2134  
2135  
2136  
2137  
2138  
2139  
2140  
2141  
2142  
2143  
2144  
2145  
2146  
2147  
2148  
2149  
2150  
2151  
2152  
2153  
2154  
2155  
2156  
2157  
2158  
2159  
2160  
2161  
2162  
2163  
2164  
2165  
2166  
2167  
2168  
2169  
2170  
2171  
2172  
2173  
2174  
2175  
2176  
2177  
2178  
2179  
2180  
2181  
2182  
2183  
2184  
2185  
2186  
2187  
2188  
2189  
2190  
2191  
219

**ABSTRACT**

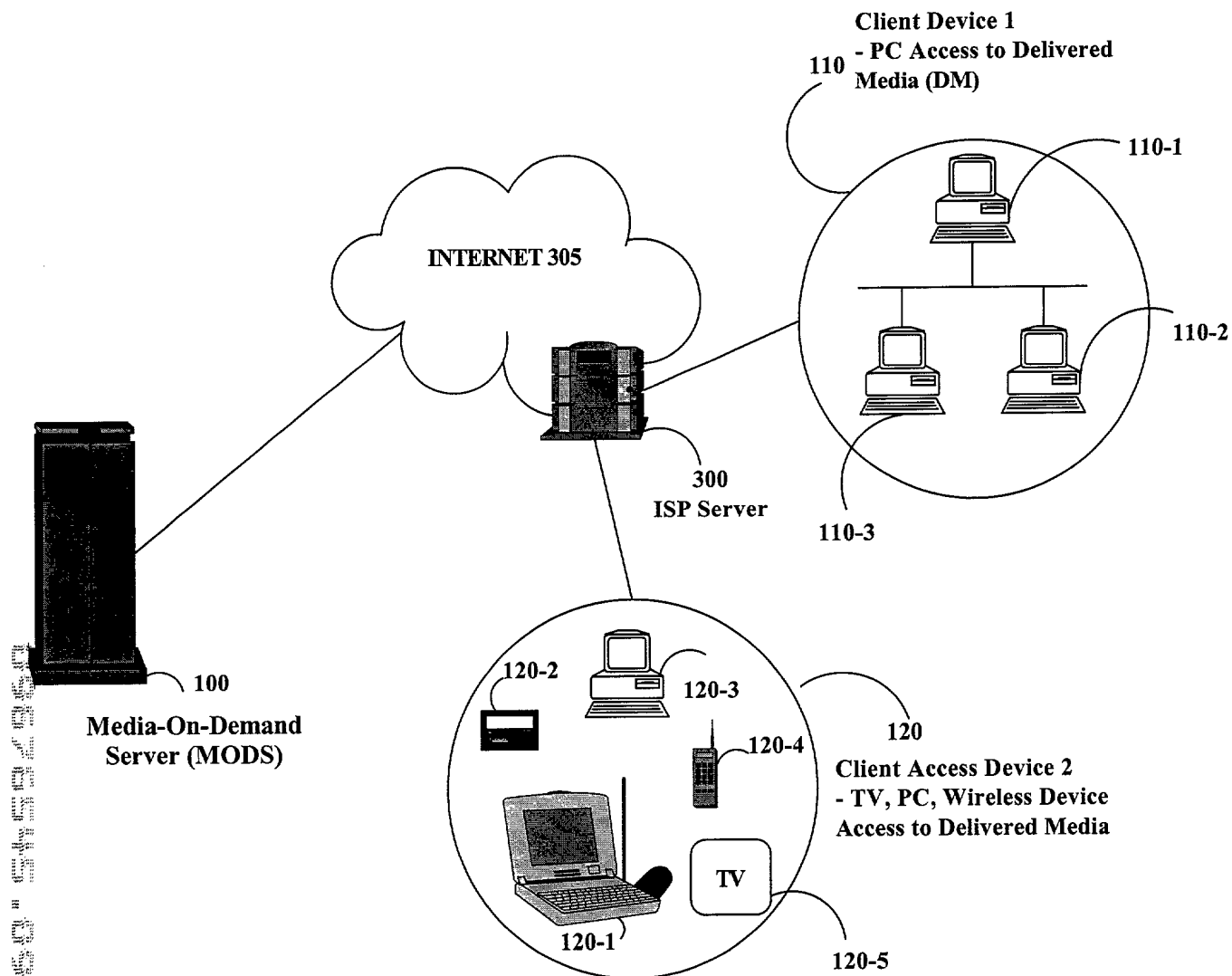
A method for providing configurable access to media in a media-on-demand system also can include delivering the media to a first client device in a format compatible with the first client device; interrupting the delivery of the media; recording a bookmark specifying a position in the media where the interruption occurred; and  
5 resuming delivery of the media to a second client device, the resumed delivery beginning at a position in the media specified by the recorded bookmark. The method further can include identifying device properties for each of the first and second client devices; delivering the media to the first client device in a format compatible with the identified device properties for the first client device; and, delivering the media to the  
10 second client device in a format compatible with the identified device properties for the second client device.



**FIG. 1**



**FIG. 2**



**FIG. 3**

User Identification	400
Delivered Media Identification	405
Billing Information	410
MODS Identification	415
DM Identification/this MODS	420
Time code of last viewed second	425
Time code of beginning of last scene in progress	430
Last Format Used	435
Transaction Identification	440
Duration	445



Information on  
last viewing

**FIG. 4.**

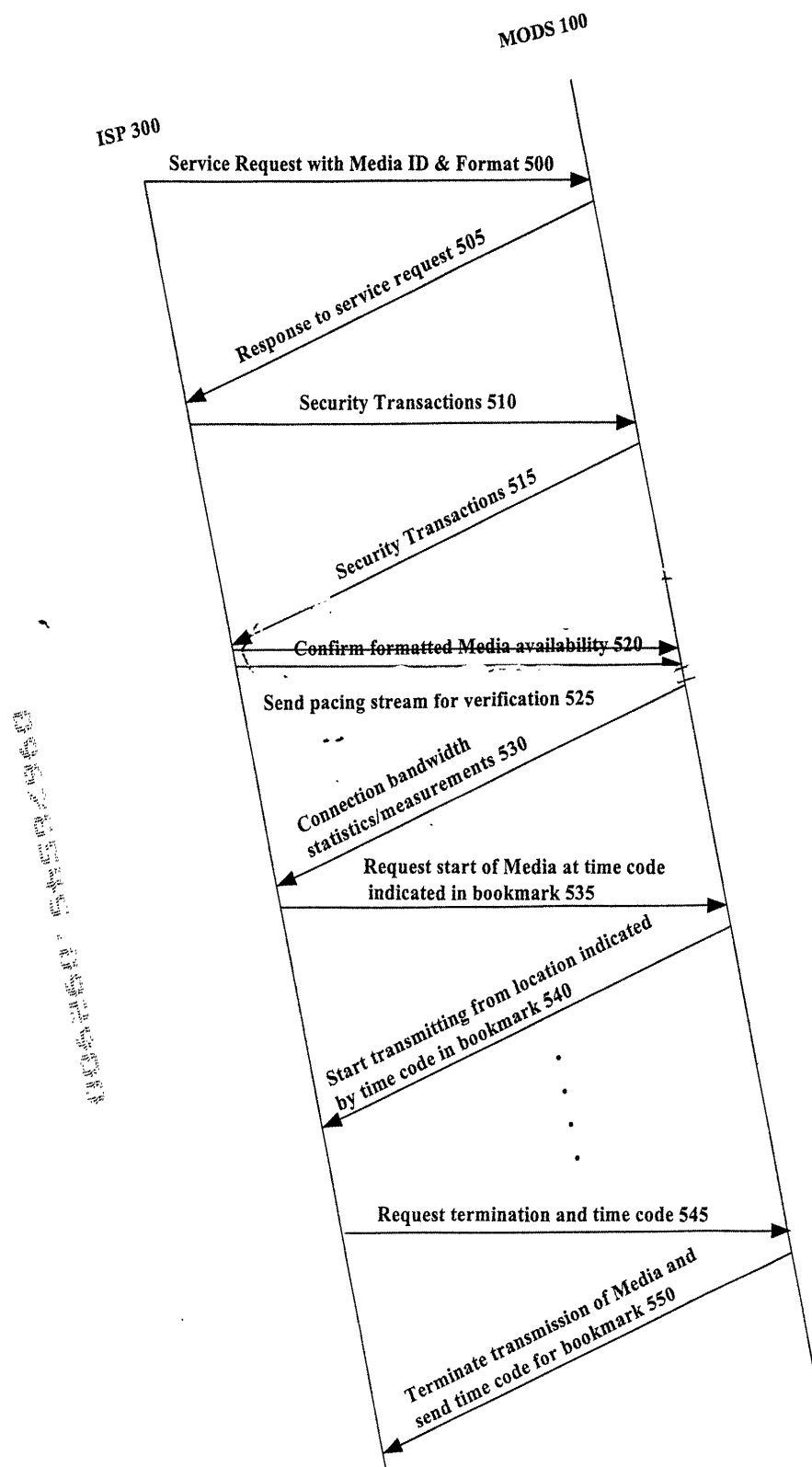
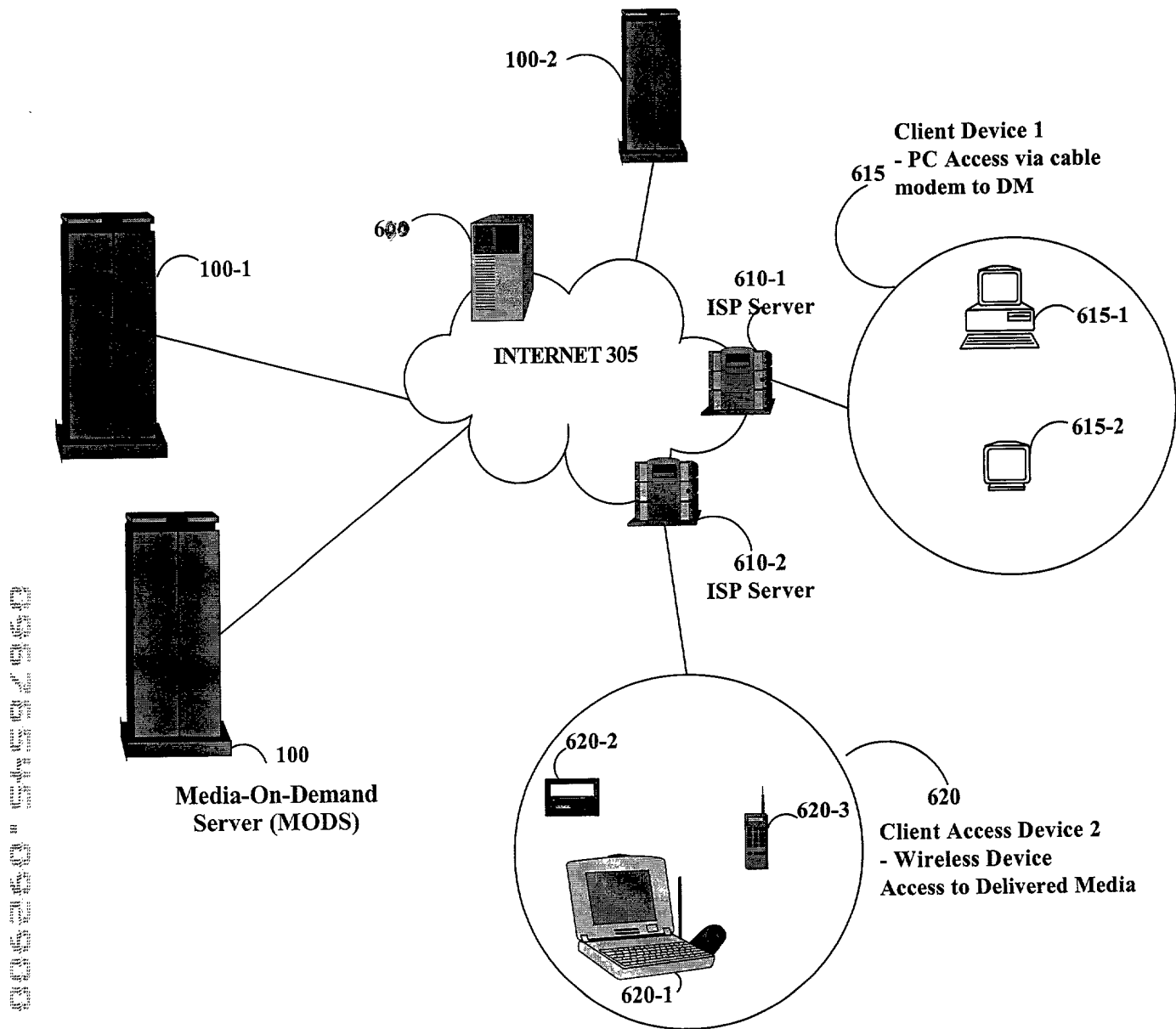


FIG. 5



**FIG. 6**



## DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am are the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

### USER CONTROLLED MULTI-DEVICE MEDIA-ON-DEMAND-SYSTEM

the specification of which (check one)

  X   is attached hereto.

       was filed on                       
under Attorney's Docket Number             
as Application Serial No.                       
and was amended on                      (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations Section 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)	Priority Claimed
<u>                                    </u>	<u>      </u> Yes <u>      </u> No
(Number) <u>                    </u> (Country) <u>                    </u> (Filing Date) <u>                    </u>	
<u>                                    </u>	<u>      </u> Yes <u>      </u> No
(Number) <u>                    </u> (Country) <u>                    </u> (Filing Date) <u>                    </u>	
<u>                                    </u>	<u>      </u> Yes <u>      </u> No
(Number) <u>                    </u> (Country) <u>                    </u> (Filing Date) <u>                    </u>	
<u>                                    </u>	<u>      </u> Yes <u>      </u> No
(Number) <u>                    </u> (Country) <u>                    </u> (Filing Date) <u>                    </u>	

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, we acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Express Mail Label No. EK575132406US

SEP 26 '00 10:04 FR IBM TELCO&MEDIA B790 914 784 6273 TO 919543462634 P.14  
 SEP 23 2000 17:22 FR GUMPLES AND BRADY LLP 5616535333 TO 919147846273 P.12/16

DOCKET NUMBER 0189-140

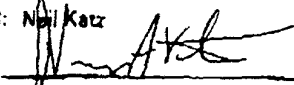
(Appn. Serial No.)	(Filing Date)	(Status)
(Appn. Serial No.)	(Filing Date)	(Status)
(Appn. Serial No.)	(Filing Date)	(Status)
(Appn. Serial No.)	(Filing Date)	(Status)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

J. Rodman Steele, Jr.	Reg. No. 25,931
Gregory A. Nelson	Reg. No. 30,577
Joseph W. Bain	Reg. No. 34,290
Robert J. Sacco	Reg. No. 35,867
Stanley Kim	Reg. No. 42,730
Mark D. Passler	Reg. No. 40,784
Steven Greenberg	Reg. No. 44,725

Send correspondence to Gregory A. Nelson, Quarles & Brady LLP, 222 Lakeview Avenue, Fourth Floor, P.O. Box 3188, West Palm Beach, Florida 33402-3188 and direct all telephone calls to Gregory A. Nelson at (561) 653-5000.

FULL NAME OF INVENTOR: Na'il KatzINVENTOR'S SIGNATURE: DATE: 9/27/2000RESIDENCE: 7500 E. Cypresshead Drive  
Parkland, FL 33067

CITIZENSHIP: U.S.A.

POST OFFICE ADDRESS: 7500 E. Cypresshead Drive  
Parkland, FL 33067

FULL NAME OF INVENTOR: Bruce P. Sample

INVENTOR'S SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

RESIDENCE: 11600 Toulone Drive  
Potomac, MD 20854

CITIZENSHIP: U.S.A.

POST OFFICE ADDRESS: 11600 Toulone Drive  
Potomac, MD 20854

GAPPA\164310.1

Page 2 of 3

DOCKET NUMBER 6169-140

<u>(Appln. Serial No.)</u>	<u>(Filing Date)</u>	<u>(Status)</u>
<u>(Appln. Serial No.)</u>	<u>(Filing Date)</u>	<u>(Status)</u>
<u>(Appln. Serial No.)</u>	<u>(Filing Date)</u>	<u>(Status)</u>
<u>(Appln. Serial No.)</u>	<u>(Filing Date)</u>	<u>(Status)</u>

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

J. Rodman Steele, Jr.	Reg. No. 25,931
Gregory A. Nelson	Reg. No. 30,577
Joseph W. Bain	Reg. No. 34,290
Robert J. Sacco	Reg. No. 35,667
Stanley Kim	Reg. No. 42,730
Mark D. Passler	Reg. No. 40,764
Steven Greenberg	Reg. No. 44,725

Send correspondence to Gregory A. Nelson, Quarles & Brady LLP, 222 Lakeview Avenue, Fourth Floor, P.O. Box 3188, West Palm Beach, Florida 33402-3188 and direct all telephone calls to Gregory A. Nelson at (561) 653-5000.

FULL NAME OF INVENTOR: Neil Katz

INVENTOR'S SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

RESIDENCE: 7500 E. Cypresshead Drive  
 Parkland, FL 33067

CITIZENSHIP: U.S.A.

POST OFFICE ADDRESS: 7500 E. Cypresshead Drive  
 Parkland, FL 33067

FULL NAME OF INVENTOR: Bruce P. Sample

INVENTOR'S SIGNATURE: Bruce P. Sample DATE: 9/25/00

RESIDENCE: 11800 Toulone Drive  
 Potomac, MD 20854

CITIZENSHIP: U.S.A.

POST OFFICE ADDRESS: 11600 Toulone Drive  
 Potomac, MD 20854

FULL NAME OF INVENTOR: Edith H. Stern

INVENTOR'S SIGNATURE: 

DATE: 9/25/00

RESIDENCE: 661 Hanover Street  
Yorktown Heights, NY 10598

CITIZENSHIP: U.S.A.

POST OFFICE ADDRESS: 661 Hanover Street  
Yorktown Heights, NY 10598

FULL NAME OF INVENTOR: Barry E. Willner

INVENTOR'S SIGNATURE: 

DATE: 9/25/2000

RESIDENCE: 365 Pine Road  
Briarcliff Manor, NY 10510

CITIZENSHIP: U.S.A.

POST OFFICE ADDRESS: 365 Pine Road  
Briarcliff Manor, NY 10510